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CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

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COUNTRY	East Germany/USSR	REPORT	
SUBJECT	Russian Interest in the Electroplating of Fine Wire Mesh	DATE DISTR.	1 April 1954
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THE APPRAISAL OF CONTENT IS TENTATIVE.
(FOR KEY SEE REVERSE)

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1. The Russians were very interested in electroplating the very fine nickel and phosphor-bronze mesh and were particularly interested in reducing the hole size of the mesh and increasing its stability. Since late 1952, there has been no apparent interest in this plating process, in the procurement of patents, or in the placing of orders for the plated mesh.

2. The plating of the mesh serves the purpose of decreasing the size of the hole opening in the screen, while at the same time increasing its solidity, durability, and resistance to pressure, heat and corrosion. While protecting the smoothness of the basic screen, electroplating apparently gives it increased resistance against cracking, creasing and splintering. Electroplating also prevents displacement of the meshes, so that the structure or weave of the screen will stay the same during storage as well as during its use. In other words, electroplated screen could be of use for all purposes where, in addition to fineness, rigid requirements as to durability, smoothness, accuracy, and resistance are needed.

3. the technical details: 50X1-HUM

(a) At present the electroplating procedure can be applied only to screens not larger than 1000 x 500 millimeters.

(b) The basic screen can be plated in such a way that it will have holes of micron size as a result of the plating.

(c) The same screen can be plated with various metals in succession.

(d) Nickel, copper, brass, tin, bronze, V2a, V4a, and cadmium have been successfully plated.

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STATE	ARMY	NAVY	AIR	FBI	AEC	OSI Ev		
x	x	x	x		x	x		

(Note: Washington Distribution Indicated By "X"; Field Distribution By "#".)

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(e) The smaller the plated meshes are, in relation to the basic meshes, the more resistant is the screen against pressure.

(f) The basic hole in the mesh has a square shape. Plating changes the cross-section of the hole into a hyperbolic form, so that the plated hole has the shape of an "ideal nozzle". As a result, the entrance pressure is almost equal to the exit pressure, in accordance with the Venturi principle (a test conducted with a 16 sq. m. piece of screen (16,900 mesh per sq. cm., phosphor-bronze, plated to 8 micron opening) in which a chemical liquid is filtered through the screen with a reported pressure of 25 atms. The efficiency of the operation is 0.98 or a pressure loss of 2%).

(g) The plated screen is very flexible and smooth and it does not crack, crease or splinter.

(h) Resistance against heat, corrosion and pressure of the plated screen is much greater than that of nonplated screen.

(i) Shifting or displacement of the wires is impossible in the plated screen.

4. [redacted] unidentified Russians were interested in a monthly delivery of 7,000 square meters of number 230 mesh. In addition, an interest was also disclosed in outright purchase of the patented process. 50X1-HUM

5. The cost to the Russians would depend upon the following:

(a) basic screen before electroplating;

(b) the degree of the narrowing of the hole by plating;

(c) quantity required per month;

(d) size of the screen desired;

(e) resistance of the electroplated screen to pressure;

(f) number of mesh per square centimeter;

(g) electroplating agent desired.

6. In October 1952, the Russians obtained samples and data of the nickel plating made on phosphorus bronze as base material in the following sizes:

	Plating agent	Mesh per sq. cm.	Mesh width after plating, in micron	Quality
(1)	nickel	2,500	100	I
(2)	nickel	2,500	98	II
(3)	nickel	2,500	90	I
(4)	nickel	3,600	100	I
(5)	nickel	6,400	70	I
(6)	nickel	10,000	60	I
(7)	nickel	16,900	40	II
(8)	zinc	16,900	39	II
(9)	nickel	16,900	20 to 25	II

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(10)	nickel	16,900	20	I
(11)	nickel	16,900	8 to 10	II
(12)	nickel	16,900	5 to 10	II
(13)	nickel	16,900	5	I
(14)	nickel	22,000	20	II
(15)	nickel	22,000	15	I
(16)	nickel	22,000	10	I
(17)	nickel	22,000	10	II[1]

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7. Samples of the type of plating as done by the manufacturers are as follows:

Type of Screen	Number	Mesh per sq. cm.	Mesh before plating (micron)	Mesh after plating (micron)
(1) phosphor-bronze	450	28,000	33	--
(2) nickelized phosphor-bronze	450	28,000	33	10
(3) nickelized phosphor-bronze	400	22,500	37	15
(4) nickelized phosphor-bronze	400	22,500	37	3
(5) nickelized phosphor-bronze	400	22,500	37	10
(6) nickelized phosphor-bronze	400	22,500	37	wires strengthened by a nickel layer of 1 to 2 micron thickness
(7) nickelized phosphor-bronze	350	16,900	40	30
(8) nickelized phosphor-bronze	350	16,900	40	20
(9) nickelized phosphor-bronze	350	16,900	40	22

1. Comment. At the time of receiving the above plated samples, the Russians made inquiries as to whether or not the samples were of the same type and specifications as the sample labeled A-1. the Russians had received the A-1 sample sometime prior to October 1952, because of the interest they manifested in this sample.

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